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Indian Standard

SPECIFICATION FOR WHEEL, MULTIPURPOSE

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SPECIFICATION FOR WHEEL, MULTIPURPOSE

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SPECIFICATION FOR WHEEL, MULTIPURPOSE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 20 May 1978, after the draft finalized by the Artificial Limbs Sectional Committee had been approved by the Consumer Products and Medical Instruments Division Council.

0.2 The formulation of Indian Standards on artificial limbs, prosthetic and orthotic appliances and rehabilitation equipment has been taken up at the instance of the Advisory Committee for Development of Surgical Instruments, Equipment and Appliances, Government of India.

0.3 Multipurpose wheel is a rehabilitation item used for exercises by patients. Therefore keeping with the policy of the Institution not to restrict the improvements in design and at the same time to ensure interchangeability of replaceable components, only the essential dimensions have been specified.

0.4 In the preparation of this standard, the Sectional Committee concerned has kept in view the manufacturing and trade practices followed in the country in this field.

0.5 This standard contains clauses which permit the purchaser to use his option for selection to suit his requirements. The relevant clauses are **3.2**, **5.1** and **8.1**.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard lays down the requirements pertaining to materials, shape, dimensions, construction, workmanship, finish and performance of multipurpose wheel used in rehabilitation of handicapped persons.

2. MATERIALS

2.1 The ribs and plates for rotating drum shall be of mild steel.

2.2 The upright columns tubes shall be mild steel tubes.

2.3 Rolled steel angle iron conforming to ISA 2525 [*see* SP : 6 (1)-1964*] shall be used for the base.

2.4 All the bolts, screws, washers, the spindle of the rotating drum and other metallic parts shall be manufactured from mild steel.

3. SHAPE AND DIMENSIONS

3.1 The general shape and dimensions of the multipurpose wheel shall be as given in Fig. 1.

3.2 The multipurpose wheel of other dimensions may also be manufactured as agreed to between the purchaser and the supplier.

3.3 A deviation of ±5 percent shall be allowed on all dimensions.

4. CONSTRUCTION

4.1 The ribs shall be soundly fitted to the circular solid rings at both ends to form the rotating drum by means of bolts.

4.2 The tubes shall be properly welded to the base so as to form a well triangular shape. The two upright tubes shall be at right angle to the base. Rubber tips shall be attached to the ends of the bent upright columns.

4.3 The central spindle of rotating drum shall be at right angle to the upright columns. The central spindle shall be properly adjusted for free rotating of the drum.

4.4 Proper clearance shall be provided between the rotating drum and the upright columns for adjusting the components of the wheel.

4.5 The welding shall be sound and all joints shall be fully dressed and finished smooth. There shall be no sharp edges or unsealed formations which may harbour dirt or other foreign matter. The various members shall be of single piece and without any joints.

4.6 A trolley may be provided, if required by the purchaser.

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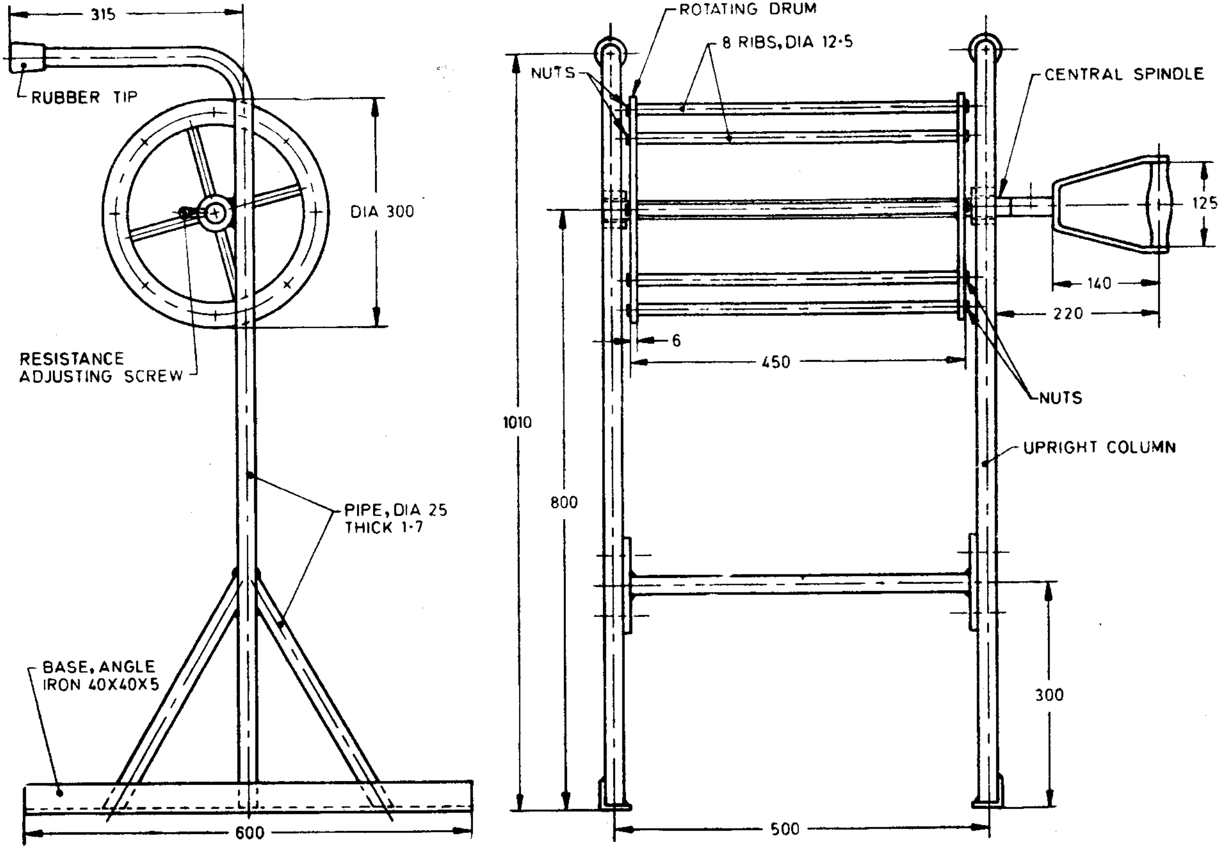
*ISI Handbook for structural engineers: 1. Structural steel sections (*revised*).



All dimensions in millimetres.

Fig. 1 Wheel, Multipurpose

5. WORKMANSHIP AND FINISH

5.1 The rotating drum, the upright columns, the base, etc, shall be finished by stove enamel or by air-drying spray paint. The colour of the paint and the number of coats shall be subjected to agreement between the purchaser and the supplier. Prior to painting all the parts shall be degreased, rust proofed by phosphating and then suitably protected by an anticorrosive primer. Each coat shall be separately stoved or air-dried. The finished paint shall be hard and shall not readily chip or flake when tested as mentioned in **6.2**.

5.2 The central spindle shall be capable of rotating true to its axis.

5.3 The rotating drum shall be symmetrical about its axis and shall be true in the plane at right angles to the plane of the vertical axis. It shall in no case wobble when turned on its own axis.

5.4 The rotating drum shall rotate freely without any shake or obstruction when not loaded.

6. TESTS

6.1 Manoeuvrability — The rotating drum shall be operated at moderate speeds without any difficulty of operation, structural or component failure.

6.2 Test for Finish — A solid steel ball of 13 mm diameter shall be dropped from a height of 1·5 mm on any painted surface of the multipurpose wheel. The paint at the place where the steel ball strikes shall stand the impact without showing any sign of tear or peeling off.

7. MARKING

7.1 The multipurpose wheel shall be marked by putting a label or otherwise with the following:

a) Manufacturer's name, initials or recognized trade-mark; and

b) Any special information regarding design or intended use.

7.1.1 The wheel may also be marked with the ISI Certification Mark.

Note — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

8. PACKING

8.1 The packing shall be done to ensure safe transportation. The packing may also be done as agreed to between the purchaser and the supplier.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	CONVERSION
Force	newton	N	1 N = 0·101 972 kgf
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2